

THE CLAIMED INVENTION:

1. Method of converting fragmented, predominantly carbon, feedstock and water, within a localized electrically arcing reaction zone, into non-self-combustible gaseous form, combustible with added air--or equivalent source of oxygen--into effluents characterizable as substantially non-polluting, comprising the following steps:

- (a) thoroughly wetting such fragmented feedstock; and
- (b) compacting such wetted fragmented feedstock; and also
- (c) subjecting such feedstock to electric arcing; and then
- (d) collecting non-self-combustible gas emanating therefrom.

2. Method according to claim 1, including a step of subjecting the fragmented feedstock to compaction within the reaction zone at least once after each incremental increase (if any) in the number of individual batches of feedstock spread therein for treatment.

3. Method according to claim 1, wherein such wetting step is performed by spraying water thereonto within the reaction zone:

- (i) from overhead, or (ii) laterally, or (iii) both (i) and (ii).

4. Method according to claim 3, wherein whatever manner of wetting is employed is effective to flood such feedstock with water.

5. Method according to claim 3, including subjecting such spray-wetted feedstock to electric arcing within the reaction zone.

6. Method according to claim 4, including subjecting such water-flooded feedstock to electric arcing within the reaction zone.

7. Method according to claim 1, including siting an available electrically grounded electrode along the base of the reaction zone.

8. Method according to claim 7, including supporting a non-grounded electrical lead to an electric-arc-producing module movable vertically within the reaction zone and thus lowerable therewithin into compressive contact with, and thereby effective to produce such electric arcing within, the wetted feedstock thereby grounded.

9. Method according to claim 7, including so supporting such compaction module adjustably in height within the reaction zone, and moving it vertically, so supported, via self-contained drive means.

10. Reactor for practicing the method of claim 1, comprising a pair of spaced-apart upstanding walls, composed of temperature-resistant material, and having supported therebetween a feedstock-compacting and electric-arc module, adjustable vertically both upward above and downward into compressive contact with feedstock.

11. Reactor according to claim 10, wherein such module is provided with horizontally opposed means for supporting such module vertically movable between such walls.

12. In a reactor for producing non-self-combustible fuel in gaseous form, combustible with added air, or equivalent source of oxygen, into substantially non-polluting combustion effluents only, a movable module adapted to compact fragmented mainly carbon feedstock therein, and further adapted when lowered into compressive contact therewith to produce electric arcing within and throughout such feedstock, thereupon producing such gaseous fuel therefrom.

13. Method of producing non-self-combustible gaseous fuel, combustible with air, comprising the step of electric arcing within compacted fragmented substantially carbon-rich water-wetted feedstock.

14. Non-self-combustible gaseous fuel, combustible with added air into substantially non-polluting combustion effluents only, from electric arcing through water-wet fragmented carbon-rich feedstock.

15. Method of obtaining the non-self-combustible non-polluting fuel of claim 14, comprising the steps of electrically arcing compressed fragmented carbon-rich feedstock flooded with water.

16. A reactor for processing fragmentary carbon feedstock into non-self-combustible fuel gas (combustible with a subsequently added source of gaseous oxygen), comprising enclosing walls of high-temperature-resistant material, and including the following:

- a. a reaction zone therein wherein the feedstock is treated, provided with electrical grounding means along the base of the zone;
- b. refrigerant circulating within the enclosing walls of the reaction zone, for retention of structural integrity despite high temperatures resulting from electrical arcing of the feedstock;
- c. piping means effective to provide water within the reaction zone, for wetting the fragmented feedstock therewithin;
- d. means movable vertically therein effective to compact feedstock wetted and subjected to electrical arcing therein; and
- e. means effective to provide electrical arcing treatment of wetted feedstock therein, thereby vaporizing feedstock plus adjacent water into the desired non-self-combustible gaseous product--whose own combustion effluent is substantially free of noxious gases, and similarly free of liquid particulates and of solid particulates.

17. Reactor means according to claim 16, wherein such between-walls compacting means is adapted to move vertically, within the reaction zone, onto feedstock to be converted therein--along with water--into gaseous fuel, to compress the feedstock, including means effecting such movement and such compaction, as and when desired.

18. Reactor means according to claim 18, wherein such between-walls compacting means is also adapted to move horizontally, as and whenever and wherever desired, along and above such feedstock to be converted into such fuel.

19. Reactor means according to claim 16, wherein such between-walls electrical-arcing means is adapted to move vertically and also preferably horizontally, within the reaction zone, to juxtapose an arc-producing electrode thereof to feedstock to be converted along with water into gaseous fuel, and including means effecting such movement, as well as such arcing, as and whenever desired.

20. Non-self-combustible gas, combustibile with addition of air or other source of gaseous oxygen, having emanated from feedstock within the reactor means of claim 16, during its normal operation, and having been collected and stored for optional future combustion.